close both spores and antheridia. In the first the spore, covered with a ciliated membrane, divides into four sporules, as MM. Crouan have already observed; but, as in the two preceding species, it is simple in the conceptacle.

The spores of *Fucus canaliculatus* present a very remarkable structure: the ciliated membrane which covers them presents very fine and close folds, which disappear soon after the spore has fallen to the bottom of the water, and which allow this membrane to extend and to form around the spores a large transparent margin. These spores divide into two sporules.

From the preceding observations we think we may draw the following conclusions:—

That some of the *Fuci* of our coasts contain dicœcious species, and others monœcious.

That the spores of the *Fucaceæ*, however simple they may be in principle, follow in their division the number 2, or one of its multiples.

That in the present state of science, these characters of fructification being added to those of vegetation, require the establishment of three distinct genera:

Fucus (*F. serratus, vesiculosus,* &c.);
Ozothalia vulgaris (*F. nodosus*);
Pelvetia canaliculata (*F. canaliculatus*).

LVIII.—*On the Development, Structure and Œconomy of the Acephalocysts of Authors; with an account of the Natural Analogies of the Entozoa in general.* By Harry D. S. Goodsir, Cons. Mus. R.C.S.E.*

An opportunity having been afforded him by Dr. Gairdner of examining a large mass of hydatids taken after death from the abdomen of a patient who had been long labouring from distension of that cavity, Mr. Goodsir found that they belonged to a new form of Entozoon, which he has called *Diskostoma Acephalocystis*, the generic term being derived from the peculiar structure of the external membrane covering the vesicles; for this, examined under a high power, was seen to be intersected by numerous branching tubuli that arose by open mouths from numerous discs of different sizes. These open stomata and tubes appeared to be organs of nutrition. Immediately beneath the above membrane was another of more delicate texture, which sent off very fine septa that traversed and intersected the body of the hydatid, for the purpose apparently of rendering it support. The mode of generation and development of these animals is very simple. The young hydatids make their appearance as simple cells, gradually increasing in size, beneath the internal lining membrane of the

* Abstracted from the Transactions of the Royal Society of Edinburgh, having been read April 1, 1844.

parent vesicle; by the rupture of this membrane they escape into the parent cavity and become independent creatures. The external or tubular membrane, when placed under a powerful glass, was found to be studded with numerous small shining vesicles; these he considers to be the gemmules of this hydatid, which, like other Acephalocystic Entozoa, is gemmiparous. In addition to the two modes of propagation now stated, for the purpose of increasing the size and extent of its own individual group, this Entozoon has another whereby it can extend the species to uninfested portions of an infested animal; the cells which have been described as floating free within the body of the parent hydatid reach the healthy tissues which lie at some distance from the parasitic mass by some means which the author has been hitherto unable to detect. In general they are no deeper than the subserous tissue, but as they increase in size they always tend towards the surface of the infested cavity, and at length burst from their confinement, adhering at the same time to the bottom of their former locality by pedicles containing cellules. In another form of Cystic Entozoon, the *Cœnurus cerebralis*, which is met with in the brain of sheep and other Ruminants, the external membrane presented an appearance similar to that of the tubular membrane of the new Acephalocyst, although not so strongly marked. Numerous heads, armed superiorly with a double circle of hooks, are implanted by means of pedicles upon the external surface of the cyst. Now it is within these pedicles that layers of reproductive gemmules are found which exhibit in their earliest stage parts very analogous to those in the ovules of the higher animals, and are developed at first in one plane only from the germinal spot, but subsequently in a direction perpendicular to the original plane; the former of these is termed the *discoidal*, the latter the *vertical period* of development. These and other more minute details, which we must pass over, since without the plates they would not be sufficiently intelligible to the general reader, prove that the development of the *Cœnuri* is more complicated than in the Acephalocysts. The author concludes his paper by tracing some very curious analogies between the forms of Cystic Entozoa and those of other classes of the animal kingdom in the following words:—

"Beginning with what I conceive to be the lowest form of Entozoon at present known, the simple hydatid, I find in it the analogue, in its own class, of the typical forms of the Infusoria, as the *Volvocinæ*.

"Proceeding to the new form of hydatid described in this paper, I consider it as the analogue of the Polypifera, and of such forms as have *Alcyonidium* for their type. In both we find the same general basal mass, and the same mode of nutrition, in the hydatid, by means of disc-bearing stomata, each disc analogous to a polype, and in the *Alcyonidium* by tentaculated heads with stomach-cavities. Both forms also are compound, the general group deriving nourishment from the individuals, and the individuals deriving support from the group; so that in both cases, the general mass and individual stomata or polypes mutually tend to support one another. Both have two

modes of propagation—one for the extension of the original group, the other for the establishment of other groups.

"The Echinodermata are represented among the Entozoa in a curious and interesting manner by the suctorial forms of that class; that is, by those forms of Entozoa which are endowed with these organs as a means of adhesion or progression, such as *Distoma*, *Tristoma*, &c. The lowest form in this suctorial tribe is the *Diplozoon paradoxum* of Nordmann. I am inclined to consider *Diplozoon* as inferior to *Distoma* and other suctorial forms, not from its analogies, but from this circumstance, among others, that its whole organization is double, and consequently less centralized. The *Asteriadæ*, among the Echinodermata, are represented in the Entozoa by *Diplozoon* and other similar forms, which undoubtedly exist. The *Tristomæ* are represented by the flat *Echinidæ*, as the *Scutellæ*. In both the *Tristoma* and its echinodermatous analogue, the *Scutella*, we find the disc imperfect in certain parts of its edge, indicating the remains of a more divided or asteroid condition of the body. The *Distomæ* are the analogues of the true *Echinidæ*. A starfish folded up upon itself, so that the tips of its rays meet at one central point, constitutes that form of the Echinodermata known as the *Echinus*. In like manner, among the Entozoa *Diplozoon* holds the same relation to *Distoma*. The former has two intestinal tubes and two mouths, one for each body; the latter has two intestinal tubes, and only one mouth. In like manner also, the reproductive organs are similar. It thus appears that the *Distoma* is only a *Diplozoon* folded on itself, as *Echinus* is an *Asterias* folded back. There are certainly some few points of material difference between these two animals, a circumstance we naturally look for; but these, if properly observed, must be traced to the difference of centralization. *Distoma* is therefore superior to *Diplozoon*, as *Echinus* is to *Asterias*, having a more centralized organization.

"The Acanthocephalous Entozoa of Rudolphi are the analogues of the Crustacea. The *Echinorhynchi* are typical of this group among the Entozoa. On comparing an *Echinorhynchus* with a Crustacean, such as a Lernean, the relation between them is so like that of affinity, that they were at one time grouped together in the same class. When the Lernean Crustaceans have passed their period of locomotive existence and have become permanently fixed, their habits are exactly similar to those of the *Echinorhynchi*, the only difference being, that the former adheres to the external, and the latter to the internal surface of the body of the infested animal. The *Echinorhynchi* have a number of short extremities or limbs near their head, analogous to similar organs, or to the atrophied limbs of the *Lerneæ*. There is this difference, however, between these organs in the two sets of animals, namely, that in the one they have never become developed at any period of life so as to suit the purposes of locomotion, whereas in the other, and during its early stage of existence, they were fully developed and employed as organs of prehension and progression, but have only become atrophied during the stationary or parasitic period of life.

"The next, and the highest forms of Entozoa, are the *Cœlelmintha*, which on examination will be found analogous to the Annelida.

"It is a remarkable circumstance, that looking on them collectively as classes, the Crustacea and Annelida are the first in the animal series possessing a truly diœcious mode of generation. So is it with the analogues of these classes in the Entozoa, viz. the Acanthocephala and Cœlelmintha, the only groups in the class which are truly bisexual."

ANALOGIES.

ENTOZOA.	INFUSORIA.
1. Acephalocystis simplex.	1. Volvox globator.
	POLYPIFERA.
2. Diskostoma acephalocystis.	2. Alcyonidium.
(3. Tænia.	3. Nemertes ?)
	ECHINODERMATA.
4. Diplozoon.	4. Asterias.
5. Scutella.	5. Tristoma.
6. Distoma hepaticum.	6. Echinus.
	CRUSTACEA.
7. Echinorhynchus.	7. Lernæa.
	ANNELIDA.
8. Ascaris.	8. Lumbricus.

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(Continued from vol. vii. p. 326.)

Description of a new species of *Bulla*, by J. Van der Hoeven. The following is the diagnosis: "Bulla albo-cincta, testa ovato-subglobosa, tenui, pallide brunnea, spira fasciis tribus et apertura albis; spira retusa. *Hab.* China."—Contributions to the natural history of Man (Remarks on the Negro race), by J. Van der Hoeven.—Contributions in Vegetable Physiology, by Dr. J. F. Hoffmann.—On the Nerves of Feeling, and the connexion between them and the Nerves of Motion, by J. Van Deen.—Prodromus Faunæ Homeri et Hesiodi, by G. P. F. Groshans.—Observations on an insect injurious to *Pinus Larix* (the larva of *Ornix argyropennella*, Treitschke, *Tinea Laricella*, Hübner), by A. Brants.—*Notices of Works*: Owen on *Lepidosiren*; Treviranus's Observations in Zootomy and Physiology; Hueck De Craniis Esthonum commentatio; Dr. H. Schlegel's figures of new or little-known Amphibia; Le Maire's Horticulteur universelle, and Flore des Serres et Jardins d'Angleterre; Endlicher's Principles of a new theory of the Generation of Plants; Link's selected anatomico-botanical Drawings; Icones Plantarum rariorum Horti regii botanici Berolinensis, by Link, Klotzsch, Otto and Kunth.

Part VII. Nos. 1 and 2.—Further remarks on the properties of